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ABSTRACT

An examination of the Hartford Graduate Center was the focus of a workshop designed to: (1) study its goals for continuing education programs for working professionals, (2) analyze a proposed approach for accomplishing these goals, and (3) assess how the knowledge and resources of continuing education can be most effectively used. Participants considered areas of human conditions, learning environments, and technical resources as they influence the ongoing graduate-level education of professionals. The report is divided into two sections· workshop discussions and excerpts from group discussions, and observations and suggestions for action. The workshop discussions are arranged according to eight interrelated topics: the role of the Hartford Graduate Center, determining what should be learned, professional career planning, adult learners, managers of learning resources, media and delivery systems, top management and continuing education, and measuring and evaluating learning. Each discussion is comprised of a summary statement and selected statements from the recorded comments of the participants. A synthesis of findings and conclusions about the center, the center's program, the faculty, the learner, and cooperation with industry are provided in the latter section. A list of participants, statement of goals of the center, and a workshop prospectus and agenda are appended. (Author/EC)

The Hartford Graduate Center

A Workshop on Continuing Education for the Professional

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A Report on

A Workshop on Continuing Education for the Professional

Sponsored By

The Hartford Graduate Center
275 Windsor Street
Hartford, Connecticut 06120

July, 1975

Robert H. Ellis
Newman A. Hall
Richard W. Schmelzer

FOREWORD

We are indebted to Richard W. Schmelzer who prepared transcriptions of audio-taped discussions and collected and collated the Workshop materials and notes to produce the initial organized version of this document.

The final document is the result of a joint effort on the part of the three authors after reviewing the taped discussions, and conference notes, and the initial version.

Robert H. Ellis
Workshop Director

Hartford, Connecticut
July, 1975

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A Report on

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I. INTRODUCTION

Assisted by grants from the Dana Foundation and The Hartford Foundation for Public Giving, The Hartford Graduate Center held a Workshop for Continuing Education on its campus in Hartford, Connecticut on February 26, 27, and 28. The purposes of the Workshop were to examine critically the Center's new statement of its goals for continuing education programs for working professionals, to analyze a proposed approach for accomplishing these goals, and to assess how the knowledge and resources of continuing education might be utilized most effectively.

In this examination, participants in the Workshop considered human conditions, learning environments, and technical resources as they might influence the ongoing graduate level education of professionals. Attending the Workshop were some of the nation's leaders in continuing education, educational psychologists, media experts, personnel and educational directors from industry, and members of the Center's faculty. (A list of participants is given in Appendix A.)

Prior to their attendance at the Workshop, the participants had received background information about The Hartford Graduate Center, a statement of its new goals as adopted by its Board of Trustees, and a statement of the manner in which the Workshop would be conducted. (The statement of the goals is presented in Appendix B and a workshop

prospectus and agenda is included as Appendix C.

The essence of the statement of the Center's new goals is that it intends to provide continuing education for professional learners in accordance with the desires and job needs of the learners in regard to content, convenience of time and place, and the manner in which educational material is presented. The Center intends to develop degree and non-degree programs of study that result from the interaction of Center representatives with students and their corporate sponsors. Proposed non-degree programs may vary greatly in length, from a single session or module to a full semester course or sequence of courses. Whenever the resources of the Center are inadequate to provide students with the courses or programs which they desire, the Center will act as broker and obtain from other universities and organizations the desired courses or programs of the highest quality.

The Workshop participants enthusiastically endorsed the statement of the new goals for the Center. The participants, furthermore, made valuable suggestions regarding methods of implementing the goals and of enriching the learning experience. A summary of these suggestions and recommendations follows the report of the discussions.

Because of the expertise of many of the participants and because an unusually fruitful rapport was established early in the Workshop that created free, frank, and open discussion, the results of these proceedings give a perspective and present a background that should be of interest to a much wider readership than those primarily concerned with graduate continuing education. These results may even

portend changes and reorientations for many types of post-high school education.

There seemed to be a sharp differentiation by industrialists of the two purposes of continuing study for professionals. Industry agrees that the major purpose of its sponsorship of continuing study by its professional staff members is in the demonstrable payoff of that study resulting from the learner becoming more competent and better able to perform his present or a future job. Industry, on the other hand, also encourages its professional staff members to continue to study in order to grow toward their own personal goals and personal satisfactions through a variety of programs, released time, and occasional tuition aid. But the industrialists stated that they were very careful to differentiate between these two objectives. They made a clear distinction between continued study for job competence and continued study for personal satisfaction and personal growth. Graduate school programs for continuing professional level education would be well advised to make this differentiation also.

Some of the statements by industrialists in the following discussion might be of considerable interest to sociologists and students of the role of industry in a democracy. They indicate a far greater appreciation by industry of the importance of goals for personal development as well as for goals for professional development. The realization that eighty-four thousand or so hours of a person's

life is spent on the job or jobs focusses attention upon the importance of job satisfaction and upon work environment. And there is indication that managers are increasingly being judged by the way they help the people in their departments grow as human beings as well as skilled workers or professionals. This does not mean that industry has forsaken the profit motive - far from it - but industry is beginning to realize quite clearly that for a company to grow and profit in a healthy and constructive way, the people in it have to grow ahead of the company's growth. New products develop out of people growth as well as out of technological breakthroughs. Continuing education is one way - and an important one - that helps people to continue to grow in their personal lives and in their professional lives, and many of the following discussions amplify and give major importance to this concept.

The essence of this report is contained in two sections:

1. Workshop discussions and excerpts from group discussions.

2. Observations and Suggestions for Action.

The Workshop discussions, Section II, have been arranged into eight sub-sections dealing with the topics with which the WORKSHOP was most concerned. These topics, however, are so interrelated that the material in any given section is not wholly confined to a single topic. The arrangement has been one of emphasis and convenience for reference rather than one of rigorous restriction to the

indicated topic. Furthermore, because three groups of people were discussing the same general topics at the same time, there is some duplication in order to indicate the context in which some statements were made.

Participants in the Workshop were assigned to one of three discussion groups, consisting of about fourteen persons for each group. These groups met concurrently for three two-hour sessions. Individuals remained with the same group for all three sessions, but a different member of each group moderated each session. Tapes of the sessions were recorded, and it is from these that the following excerpts have been transcribed and edited.

The reporting presentation which follows reflects the exploratory informality of the Workshop. In each sub-section a summary statement is provided followed by a selection of statements derived from the recorded comments of the Workshop participants. These are not always direct quotations but reflect very well the spirit of the discussions.

A synthesis of findings and conclusions of the discussions are provided in Section III, Observations and Suggestions for Action.

II. WORKSHOP DISCUSSIONS

A. The Role of The Hartford Graduate Center

1. Summary

It was generally recommended that the Center endeavor to maintain the high quality of education for which it has been noted in the past. The Center's statement of its future goals in which it described its developing role as that of being an education or knowledge broker for professionals in the area was also endorsed.

There was considerable discussion as to the value of a graduate degree, and most of the speakers from industry stated that the acquisition of a Master's degree did not result per se in more salary for the recipient. They looked upon the Master's degree programs as necessary recruiting tools, but surprisingly there is a growing trend to reduce the financial support by companies for individuals enrolled in the degree programs.

Despite the expressed desire for engineers who have breadth and the ability to manage people, several speakers in the following excerpts stated that their firms would not support engineers who elected to study Master of Business Administration programs; whereas, they would pay for them to study more courses in their specific branch of engineering.

The need for monitoring of quality and for the evaluation of what students have learned from a continuing education course are emphasized in this discussion.

2. Discussion Excerpts

--I define continuing education as the formal activities associated with learning that an individual goes through in accepting and processing and acquiring new information throughout a working career. Such education aids the individual's growth and builds up his confidence. It is a continuous process. It refreshes, upgrades one's abilities, and makes one aware of new information, techniques, and concepts.

--Our job is to make recommendations to The Hartford Graduate Center on how best it might meet the needs of the working professional. His educational needs may be very traditional or they might be unique.

--The Center should meet with companies and with prospective students and discuss their educational needs. It should also consider a hot-line service so that it may respond rapidly to short-term needs. Furthermore, it should compile an inventory on what is going on in this respect nationally. The Center then could serve as a broker or local distributor. As I see it, the Center should assess the quality of other continuing educational operations, keeping abreast of what is going on in its field. Its faculty should be involved in discovering and meeting local continuing education needs of the professional and in monitoring quality - their own and programs for which they serve as broker.

--The Center needs to develop systematically some sort of library facility and some sort of assessment of what is going on elsewhere throughout the country, especially in continuing education for graduate engineers, short courses, mini courses, and instructional materials. In the Rochester area, Rochester Institute of Technology makes use of video-tapes. They establish a pricing scheme whereby it is advantageous for local industries to get together and see if offering three or four

sessions of the same course might produce a price reduction. The Center might do something like this for the Hartford area. It could also bring to Hartford short courses from outside for the benefit of local industry. This is just one of the things it might do if it really plans to serve as an education broker.

--What the Center is about is delivery systems. This is the heart of the program - setting the pace in bringing educational material to students in any way they want.

--Industry knows what it wants, what it is willing to pay, and just how it wants to get the education delivered.

--Economics are important and you must have a ceiling on the budget.

--I'm not sure that industry does know what kind of education it wants. It does, however, ask which of these media can I live with because of the cost, the characteristics of my community, the characteristics of the subject matter.

--Delivery system is a fancy word for media used to deliver information. The medium has been pre-selected and everything has been designed to fit that medium. I am concerned that we need to establish a program design principle first and then select the medium.

--Designing this educational medium, you must first start with operational requirements. Then there is documentation and feedback all the way through.

--Another service objective for the Center is a person's own developmental program. Maybe that's an advanced degree. Our company will contribute partially to that if we feel that one's participation in such a progrm is essential. It adds to his involvement, and utlimately what he gets out of that program is useful to us. So we pay a part of the course and give some released time. Interestingly enough we have just changed our philosophy, and you should factor this in to the Center's planning. Where we used to support graduate degree programs 100% once they were approved by the person's supervisor, we now have reduced substantially the study areas we will support. The study now has to be job-related. We have completely cut off any support for doctoral programs, and we now only partially support master's programs. This is our way of telling universities

where the priorities are. We in the future are putting our dollars on a lower level than master's programs, and we're putting them on job-related activities.

--Our relative priorities also are changing. We have what we call graduate work-study. It is part-time study on full-time pay. For instance, we would approve courses toward the Master's degree in Electrical Engineering or something like that, but if it came to an engineer's wanting to study for a Master's in Business Administration, we probably wouldn't approve. The built-in bias that we have is that if we made a Master's in Business available to engineers, the majority would be spending their energies on non-job-related study rather than on further study in engineering, where we feel we have greater problems. That's the way we establish our company's educational priorities.

--To be very harsh about it, we use the opportunity for study for a Master's degree as a recruiting tool. It is an excellent recruiting tool to have this Center here providing the chance for a person to get an advanced degree while he is working and getting fully paid. It helps us in our nationwide competition for good people because other companies are also providing this benefit and we would lose out if we didn't. There is nothing magic that happens after a person does get a Master's degree. Nothing at all. He may leave the company if he wishes. He can use it to gain a higher position elsewhere if he can. No strings attached. We don't have our employees sign contracts or anything else.

--The Center sees itself as being responsible for continuing education at the professional level. Thus, the Center must supply quality education as perceived through the eyes of the student.

--I think you would limit yourself to too narrow a base if the Center were to concentrate largely upon degree programs.

--You can find out very quickly if the Center were to propose to deliver high quality instruction, at a high price, conveniently, that meets student needs in the plant. You'll find out when the company establishes its policies for the support or non-support of such a program.

--If the Center is going to stay viable it is going to have to establish some sort of quality control. It needs to do this to maintain its reputation, because it intends to concentrate on professional, graduate level instruction. Let the quality slip and you're dead.

--I think you could con the public into programs of lesser quality for some period of time, but eventually it would catch up with you. Students vote with their feet. Professionals just won't attend or won't buy a mediocre program.

--Despite the fact that the reputation of an educational institution tends to lag by about 20 years, in continuing education if you start to slip the more mature students spot it immediately.

--I agree the time-lag is much shorter.

--As long as the Center awards degrees or certificates, outside agencies are going to be involved. Accreditation is an essential to the public image of your quality control.

--You can't have a one-way delivery system and have quality control. You've got to find out somehow or other how it's working, and this means assessment, evaluation, tests, follow-up.

--In summary, the Center should capitalize upon its strong factors, one of the most important of which is that it is dedicated to fit the needs of the adult learner and the corporation employing professionals. Another is in its concept and use of adjunct professors. These professional teachers who are working in industry or as independent consultants should be used to their fullest capacity. They bring realism and experience to their teaching.

--Build with the success which the Center has.

--In order to make graduate programs available, the Center must plan for greater emphasis upon short courses and upon innovative delivery systems.

--Delivery systems are fine provided that you have some means of certifying that the student has acquired, understands, has mastered - I don't care what words you use - such and such a course or program. Certainly

you cannot do that completely by tapes. You can do it, however, if you set up some sort of individual feedback and tests. Any system must be done in conjunction with instructors, but you have to be especially careful even with instructors to monitor the media-aided programs.

--All of the programs which the Center has are closely and carefully monitored. If we find a course which is not measuring up to our standards, we change it on the spot. It's not a perfect system and we're evaluating it very closely, but I think this kind of monitoring is not being done by a typical college or university.

B. Determining What Should Be Learned

1. Summary

Although a graduate degree may not be a reliable indication of a professional's competence, it does give him a confidence that those who do not have degrees often lack. Furthermore, the reputation of the institution awarding the degree adds to the professional's confidence. Degrees are also good motivators. Where a degree was offered for a graduate professional program by independent study and correspondence, there was an 80% completion rate as opposed to the traditional 20% completion rate for such courses without the chance to earn a degree.

Older professionals and members of minority groups found great difficulty in keeping up with students less than five years out of college in degree course-work. For the minority people, motivation was the chief reason for their difficulty. They often acted as though they had already earned one

degree and that was achievement enough. Middle management is often unsympathetic toward continuing professional education, largely, according to one view, because the middle-aged fellows didn't know that they didn't know. Some of the people in industry take the view that it is their responsibility to provide opportunities for professional people to grow and develop throughout their entire professional lives. Both industry and the professional learners should have input into the courses which are designed to help keep professionals current. The flexibility of non-degree courses and seminars was, in the opinion of most of the speakers, of greater value both to the sponsoring industry and to the professional learner, than the more rigid degree course requirements.

2. Discussion Excerpts

--If you equate competence to a degree program, you're going to have to stop using the statement alone that you're a quality institution and you're going to have to prove it. There's no longer much enchantment with certification, probably because a lot of colleges have turned out degrees and certificates that didn't mean anything. There are an awful lot of highly qualified people in terms of certification in high positions who are turning out mediocre and even shoddy performances. There's a disenchantment with the business of certificating people. If you're right that competence and a degree are the same, then you're going to have to make it evident to a new generation that denies this similarity on the basis of the old statements.

--This is not a new problem. Degrees have had variations for years. I would suspect that the reason that the Center can get away with charging twice the cost of a credit hour for its degrees is that a certain inherent evaluation has taken place that its degrees do attest to competence and quality. I agree that there is a constant need to document this.

--This may be a case of the Cadillac or the Rolls Royce. There's always a market for the elite.

--For the individual, the prestige of having a degree from an acknowledged first-rate institution is worth something.

--It took the Center fifteen years to live down the reputation that the Center was United Aircraft University. But that in itself may have been the biggest single reason why they've sold the idea that this is a quality institution. One of the Center's strengths has been that for the past twenty years its been in bed with these people. What I'm saying is - get a king-sized bed and an electric blanket and get some more big industries in bed with you.

--There's more to teaching than just transmitting information. You're changing attitudes. I've often thought of the Master's degree not so much as giving people a certain amount of information but rather giving them confidence - changing their attitudes in the sense that they weren't timid any more.

--You see that often in industry in a person who has a great deal to offer but has no degree. He usually wants verification by some outside source.

--Our Master's degree program is geared to the people who have just come out of school. When we have an old guy come into the program, he looks around and is stunned. He seems to walk through the program as though he is punch drunk. He doesn't have any self-confidence, and what confidence he had seems to become eroded.

--Another point. When minority group people come into our program and we talk about the chance for further study, they are amazed. They think they were supposed to have made it with their education and degree, and now we're talking about further study. They react as though we had played a dirty trick on them.

--I don't think we have attempted to really meet the needs of the older engineer nor the minority engineer. I'm not sure how we do it.

--Nobody is sure how you do it. But what the Center has not said is that it is even interested in helping such people. Because by presenting your degree programs, you're not making that statement. From our view there is a problem out there - which is the care and feeding and growth and development of a person throughout his entire life. The Center should state that it would like to join with industry in meeting at least partially such a need.

--There are at the Center some piecemeal moves in this direction - mostly in the non-degree area.

--The policy statement of this Center probably ought to say that it feels it is important to do something to help a professional throughout his entire career.

--The simple fact is that enrollment in college is going down, and soon you're going to have nothing but the older engineer and professional as your market.

--There has to be an interaction, a rapport, a dialogue built up between the Center and industry to determine the content of courses, and that's almost counter to traditional academic practices. Industry, it has always been assumed, should not be able to influence the content of a course.

--I have some engineers who come completely unglued if you ask them to go in and make a presentation to the manager. They never learned how to do it in college, and yet this one ability may determine their getting ahead because if you can't tell someone how to do something, you're not a very good professional.

--At some institutions, they don't get engineering drawing so that the first thing we have to do is to teach a graduate engineering drawing.

--We have chemists who know the mathematical structure of sodium chloride but they don't know that its a white crystalline solid.

--What about motivation for continuing education?

--With the young fellows you don't have a problem. They know that they're going to have to continue learning throughout their careers. It's the middle management fellows you have to convince. The fellows who earned the doctorates within the last five years are the ones who want more education, and they're the ones who need it least. Middle management, on the other hand, doesn't know that it doesn't know - and that's where all the inertia is.

--We wondered whether the degree really did encourage people toward continuing education. After a few years we started to look at what was happening to people who were enrolled in what we called a Professional Development degree program. With some correspondence courses we have about a 20% completion rate. For these there was only a certificate of completion. We thought if the Professional Degree itself is a motivator we should have a higher percentage completion rate. So we examined the correspondence and independent study courses for the Professional Degree and we found an 80% completion rate. Remember 20% completion is the traditional rate.

--Despite what the universities claim, we in industry find that there is a strong defense by faculties for rigid requirements and structures in the offerings by nearly all educational institutions.

--I agree that there is need for more flexibility in course offerings in continuing education to help meet the special knowledge requirements.

--Continuing education for professionals does not have the traditional graduate degree focus which emphasizes the discovery of new knowledge or the understanding of highly theoretical and often abstract principles. In continuing education for professionals, the emphasis is on the immediate and practical.

--That is why it should be important for places like this Center to have an industrial advisory input - not to dictate to it what courses it should be teaching but to alert it as to what is needed by practitioners.

--We still haven't settled whether an education program that leads to a degree or certification ensures greater competence on the job than one that merely permits the learner to gain that competence in accordance with his own needs.

--One thing we know. The professional learner should have input into the content of the courses he takes.

--Not only that, but there should be quick response. For example, I had a call from the director of one of our major laboratories. We had just received three major government contracts. He said in order to carry out the contracts we were going to have to refresh our people. So in six weeks I had to get out a program for forty managers. That's typical of the kinds of things that happen. What did I do? I called the Center and told them of our problem. And they are providing me with the mini course I need. They're using adjunct professors who have had the experience and expertise that we are looking for to help our managers. This is the kind of educational service we're seeking.

C. Professional Career Planning

1. Summary

Although engineers and other professionals as a matter of course plan and examine every proposed detail of a project upon which they are working, an amazingly few of them devote much attention to planning their own careers. Yet graduate continuing professional education is based upon the assumption that professionals are aware of what they need to know to continue to grow and develop in those careers. They tend to rely upon others to do their planning for them.

When industry, however, does take an interest in the career development and the personal development of its professionals, it lays itself open to the charge that it is interferring with the personal lives of its employees. Thus, a third party such as a university or the Graduate Center is looked to for assistance in career planning as well as in continuing education.

Formerly, the way for a professional to gain job security in a large company was to become a specialist and an authority on one small phase of the company's operations. But by so doing, the professional frequently locked himself into a cul-de-sac with little chance of advancement. The cynical suggestion was made that the way for an engineering professional to gain more responsibility and salary is to get out of engineering.

Industry, furthermore, states that it wants its professionals to take certain continuing education courses for the knowledge and skills that the professionals will obtain, but what industry doesn't tell the educators is that it expects certain kinds of people to emerge from the exposure to more education. Industry also states that it wants independent thinkers who are self-confident and who don't follow along with the crowd. The truth is

that most organizations can't and won't support more than a handful of such people.

Industry is concerned about the personal as well as the professional development of its employees because it knows that those who are living full and satisfying lives perform their jobs better, get along with people better, and view the future with confidence. It also urges its employees to look at the kind of future they want for themselves and make plans for attaining it.

2. Discussion Excerpts

--Most engineers have never asked themselves the question - "Where do I want to be professionally ten years from now?" This is ridiculous, because how can you get there if you don't know where you want to go?

--About ten years ago when the job market was just the reverse of what it is today, our company had to have more engineers with special capabilities. Working for the director of engineering, I set up a program for ten weeks of full-time classroom instruction. That sounds expensive, but colleges don't develop the kind of people we need. In that program we collected or hired over 200 engineers, guaranteed that they would get classroom instruction and that I would worry about their placement in the company. I had the authority to take them out of one department and place them in another. This was necessary to produce people who could step into a testing program and make certain that the boats we were producing wouldn't sink. Now these engineers - many had already been educated in some fields beyond their needs - were the ones that stayed with us, and in ten years they were all at the managerial level. That's what education and career planning can do.

--I think some of the things we have done to encourage greater participation in continuing education is to make programs more accessible by bringing them on site. We put that participation on the employee's record, and it is used as evidence that he is heading somewhere, but we don't give him a raise for passing a course.

--The question is asked, "What methods do you use to assist in career planning for professionals?" We in our company have a problem with that question, but we do have what we call a career management seminar. Even though we use the word "management" it's not for managers but for individuals or for managers as individuals not in their capacities as managers. It's a two-day seminar in which the individuals meet in groups of about six and not more than eight. There is one person who serves as guide or catalyst to go through a series of structured exercises which range from life planning to life script writing, to writing a narrative about a day in the professional's future. We also ask them to write their own obituary. No, this is not a dead giveaway. We ask them, "What experiences have you had that have been particularly successful? Analyze why. Describe those experiences that have been unsuccessful and analyze why. Ask yourself if the foregoing were valuable experiences, and why. How would you go about getting more of these experiences in your life?" At the end of the two days, the individual commits himself to stating, "Here are some of the things I have decided that I want to do as the result of looking at myself in this seminar. These things I can do for myself. But here are some things I'm going to need help with." There's some worry on the part of our company that we're asking people to reveal too much about their own personal lives which may be none of the company's business. I agree that it would be more desirable to have someone else run such a seminar. It would be safer than having some of this information in our company files. Perhaps the Center could do something like this.

--Whose obligation is it for a professional's own growth and development? Is it the company's? The Individual's? A place like this Graduate Center?

--Sometimes the individual doesn't know his obligations himself, how to select learning opportunities, how to choose a long-term personal goal.

--To be a bit sardonic - one of the goals of most engineers after they have been working as professionals for a while is to get out of technical work and into a job with more responsibility and more pay.

--The trend in the past was to be an extreme specialist, to be able to do something that few if anyone else in the company could do. That was your insurance, but too often that was your own little cubbyhole and you were stuck in it.

--What we see now in a number of professions is that there's a yearning on the part of employers for people who are broader than the single-type specialist. Where they used to say, "We'd like all of our professionals to have Master's degrees, now they're saying, "'Let's forget the Master's degree. Let's give them the things they need to make them better people, better workers.'"

--You've identified something that I have observed for a long time. That is the need for generalists - the fellows who have the breadth to put this and this together to solve the main problem. Those are the fellows who really seem to get a kick out of their careers.

--I'd like to review how a company should integrate a learning program for its professionals into its long range planning, especially into its product planning. Today, if we have an available piece of technology on the shelf we are likely to pick that to develop a new product, and then create a market for that product. This, as you can see, is backwards. We need to know in a general way the kind of new products we ought to be producing ten years from now, and what technology they're going to require. Then, we can set about a program of educating our fellows for the expertise that it's going to take to produce those products competitively. We've got to start from day one and build a team with the necessary information. It isn't a question of "Can industry afford to educate its professionals?" It's a question of the kind of knowledge that it's going to take to produce a new product line, and then setting about providing its people with that knowledge

as a part of the line's developmental costs. In the long run that's the only way to go - and, furthermore, it's the cheapest.

--Well, this is a bit away from professional career planning, or is it? Someone earlier said that the way you get ahead in a company is to get on a "hot" project and hang onto its tail. We're saying get the training and information needed to produce the product line tha- you hope is going to be "hot" in the future.

--I don't even think that it needs to be a "hot product line." I was chairman of a committee that attempted to identify and recommend rewards for outstanding teachers of engineering. This was a national committee and we interviewed 150 engineering deans as well as leading educational psychologists. The one characteristic of good teachers that we found that was universal was that all of them had growing minds. Hopefully, continuing education for a purpose such as a future product line opens up people's minds and makes them grow. This is reason enough. The degree of success or prestige is a pleasant add-on.

--If you could take all the personal objectives of your people and list them, and then take the corporate objectives and list them, you might be able to find a pattern whereby personal objectives and corporate objectives were brought somewhat together or at least optimized. At the very least, we could then come to this Center and say these are the kinds of things we want our professionals to become competent in and over here are the kinds of things they want to become competent in. Wherever there's a match, we'd like you to put full steam under it. We can't force our professionals to learn what they don't want to learn, and what they do want to learn may someday be very helpful to us.

--A professional at best only spends about 20% of his time at his specialty. The rest of the time is spent interacting with people and, believe it or not, with money. I'm not talking about financial management. About three fellows in our organization do that, but money management is something everyone does. But until recently we had never thought of it that way. We are now teaching money management to everybody. We had assumed that everyone knew how to manage money, how to participate in strategic planning, how to

manage in an inflationary environment by, I suppose, just observing how the so-called experts did it. But by listening to people talk, by observing what they did, and by the questions they asked us, we discovered that we ought to give some seminars on these things. We had been making unjustified assumptions and in areas where much of our people's real work was. The Dean of a Graduate School of Management once said that intuitive administrative decisions were almost always counter-productive. We learned that the hard way. We learned that we have to show our people how to make managerial decisions based upon evidence not intuition. And after we ourselves had fallen into that very same trap.

--Industry or any client will tell you that he wants such and such kinds of courses because these represent problem-solving, but what the client doesn't tell you is that he wants certain kinds of people coming out at the end. If you want people who are going to solve problems in a group, you have to have people who are generally conforming and have a high respect for authority. But if you want to develop individuals who create and innovate and from whom you get your major breakthroughs, then you want individuals to come out who do not respect authority and who are strong in self-confidence and self-concept and who push against the group. Most organizational climates won't support that strong individual even though that's the kind of guy they tell you that they need. These original thinkers don't have to engage in career planning. They just are themselves. They're confident enough to know that they can and will make a contribution to society so they don't worry about getting ahead, making money. They are confident enough to know that the money will come and that sooner or later recognition will come to them, so they just go on creating, inventing, and being a terrible "pain in the neck." No company can stand more than one or two of them. This Center never will be in the business of educating such people or of creating geniuses. Rather it will help educate the kind of people who will take the new invention and put it into production and make it available to people everywhere.

--An important way in which a company can become more effective in its promotion and reward system is to measure employee growth. This can be done by setting growth objectives with the employee at the beginning of

a period. Then, at the end of that period the growth of the employee can be measured against those objectives. Frequently such a measurement reveals obstacles to growth which were not previously identified either by the company or by the employee. I wouldn't set the objectives for growth in concrete. They should be changed by mutual agreement as circumstances warrant.

D. Adult Learners

1. Summary

The environment is quite different for the adult learner than it is for the undergraduate. The motivation is different and the opportunities for learning are different. The failures of professionals do not occur because of their lack of a specific segment of knowledge, but because the individual was not turned on. One of the strong points of a quality educational institution is its ability to distinguish between what are the vocational aspects of programs for adults and what are the educational aspects. Along with the vocational, a quality institution can give its learners inner resources. It can change the laggard by helping him to change his self-concept. It isn't the content that counts. It's what an institution does to an individual to bring about a change in his self-concept. Continuing education can accomplish this much better than graduate degree programs.

Adults have a different time perception than children or undergraduates. By the time a person has reached adult-

hood, there's a far greater range of differences in his capabilities than those of his fellow adults. This difference tends to spread rather than narrow throughout our lives. Adults as learners demand to participate in the learning through frequent interaction. They prefer that the learning should be problem centered and meaningful. And as they grow older they want to have the learning as autonomous as possible. The Center should, therefore, build these conditions or specifications into its learning patterns, remembering that adult learners are much more heterogeneous than undergraduates or persons fresh out of college.

2. Discussion Excerpts

--Historically, continuing education programs for engineers did not really concern itself with the characteristics and needs of those engineers but rather with what the faculty perceived as being needed by working professionals.

--We in industry can identify training and educational needs that do not relate to Math 101 or Electronics 205, but rather relate to how do I grow and develop and get greater satisfactions from my work because I'm in this environment for most of my life.

--The failures in our business do not occur because of the lack of a specific segment of knowledge, but occur because the individual wasn't turned on.

--There may be other kinds of commitments and fulfillments than the drive for material success, and this doesn't mean the quality of life with a capital "Q".

ERRATA

Page 25, third paragraph, first line -

STRIKE: Harold Cyril in Adult Education said

ADD: As Herbert Lionberger originally noted

Page 42, fourth paragraph, fourth line -

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ADD: and

--Distinguish between the vocational aspects of the program for adult learners and what to me are the educational aspects. It's these aspects added to the vocational that I think are one of the uniquenesses of a quality educational institution. Along with the vocational it can give people inner resources.

--Educational institutions need to examine all of the roles of the adult learner. These are (1) Passive, (2) Anxious, (3) Goal Seeking, (4) Goal Determining, (5) Beginning to Learn, (6) Persistence, and (7) Goal Attainment.

--Harold Cyril in Adult Education said there are four kinds of engineers - there are innovators, pace setters, majority adopters, and laggards. The innovators are the discoverers and inventors, the pace setters apply the inventions, get involved in professional societies, attend meetings, and disseminate new knowledge, the majority adopters follow through, attending continuing education courses and get the real work performed; the laggards somehow or other have never been turned on, seldom get promoted, move from job to job.

--What you are saying is in line with some studies that are underway attempting to classify the social orientation of individuals. The innovators, who comprise about three percent of the working population are asocial or non-social - they don't care what people think about them. They are original thinkers and take very little for granted. They are often tough to get along with. They're brilliant, eccentric, often cantankerous. They'd make horrible managers. The pace setters, who constitute about seven percent of the working population are more socially oriented. They want to make advances within the rules of the game. They are the leaders, teachers, chief engineers, project directors, and so forth. The majority adopters seek above everything else social approbation. They follow the rules, do what is expected of them, climb the ladder rung by rung up to a point. They are the ones who are likely to have a mid-career obsolescence crisis. They comprise eighty percent of the professional work force and are, of course, the main targets of continuing professional education. The laggards account for the remaining ten percent.

--The pace setters always showed up for seminars, were always seeking new information, were eager for continuing education courses that really gave them something new.

But the really top people never attend these meetings nor seek further education unless the seminar leader or teacher is a peer in ability.

--There's just enough truth in this kind of classification so that it should not be ignored by continuing educators. There's nothing we can do for the laggards so let's forget them.

--That's where I disagree with you. Where you are on this scale is really a matter of self-concept. You change the laggard by helping him change his self-concept. It is possible for him to move up at least one group with a proper self-concept and it is even conceivable that he could make a leap all the way to the top. That says a lot of things to an institution. It isn't the content that counts. It's what you do to the individual. If you change his concept of himself he can move. You can change his whole life.

--And continuing education can do that, but study for a Master's degree probably can't, because of the restrictions put on by Big Brother out here that you must have sixteen hours of this and thirty-two hours of that, etc.

--As a front line manager if I could increase the productivity of the majority adopter by ten percent I'd make a significant contribution to my company. I'd be looked upon as a world beater. That's where eighty percent of my labor costs are.

--You were saying that at this Center you get the top ten percent of the professional talent. If you decide to expand your market, you may have to appeal to some of the majority adopters and thus change your course mix.

--I think there is a very good market in this country for a few institutions that keep their quality as high as possible and appeal to the elite. State supported institutions have to provide for the majority adopters. HGC had better decide which route it is going to take and clearly understand the kind of learner it is appealing to.

--This is the first time I have ever sat in a meeting where the guys from industry have been so candid and have told us that they are looking for Bachelor's degree people

rather than holders of advanced degrees.

--The learner's own immediate environment is much more important to his learning than a school building or classroom. Thus, he can learn well while on the job, and industry can get bigger payoffs by building a better environment for learning.

--It might be appropriate here, if you will bear with me, for a statement about the characteristics of the adult learner. There is quite a difference in time perception with respect to adults over undergraduates or over children or youths. To an adult time means something quite different. He is a part-time learner which implies that he's busy with family, busy with employment, he's got hobbies, he's got all sorts of other things in his life. This is an observation that anybody can make in looking at himself or at his students, but psychologically there is something underneath that, and that is a difference in time perception. When an adult looks at a job he computes the time it's going to take him to do that job which is very different from what a child does; so you have completely different attitudes on the part of adults to learning tasks because they don't just look at the task of learning. They figure that's the task, that's my objective and then they start constructing a matrix here, and they figure it's going to take me twenty hours. Or they say, "How can I break this up into my life pattern? How can I yield twenty hours of my time?" (Or whatever it's going to be.) This has to be exceedingly practical and this involves matters of convenience. People sometimes get irritated by continual reference to convenience for adults. It isn't really that you're trying to make learning easy. It's that you're trying to help that adult find the twenty hours that he needs to get to his learning objective, and sometimes the only thing that will yield in that person's life is to find shortcuts to information-gathering. That's one of the places where you can usually get a lot of time. Also, by the time a person has reached adulthood there has been a differentiation of unique ability patterns among adults which is very different from early learners. There's a far greater range of individual differences among adults than among children. People are often surprised at this but if you look at the adults that you've worked with and try to forget that you're all wearing shirts and ties and they're coming from industry - that's a sameness - but look beyond that to the fantastic range of abilities that have been differentiated in 35, 40, 50 years of life.

This is what we do as individuals. We each go down the routes that appeal to us, that we're good at, that we get reinforcement from. Differentiation tends to spread rather than narrow throughout our lives, and the designer keeps this in mind because this is both an advantage in design and a disadvantage.

Adults have developed predispositions and sets for survival. You have to cope with this as a teacher. A predisposition is a process by which you select certain responses to make to your environment, because you've found that they have worked in the past or they protect you from harm or from injury, and you're predisposed if you go down this way. You always choose not to do certain things or to choose to do certain other things because this has kept you safe in the past. This is a big advantage in some kinds of learning and it's a terrible disadvantage if the new learnings required get into the areas that you have previously choosen not to get into. Then you've got a real problem of self-perception. Now, what we call "sets" - these are preferential responses that people make for various kinds of motivations that they have and, again, you have advantages and disadvantages about these things. There's a different perception of perseverance or persistence in the adult which is very different from childhood or youth or early adult learning. An adult can persevere to a far greater extent than a youth or child because he is more aware of his own faults. That is because he has lived longer to discover them. He has learned how to manage such things as time and space, and he knows the direct consequences of learning in his life, so he will yield up to you things that frequently he shouldnt' in terms of his entire life. He will give you twenty hours of time in a period of his life when maybe his children need ten hours of that, but he'll sacrifice that because he will persevere. He knows the consequences. The direct consequences of learning than are an important advantage in designing. Now, out of this I would suggest that conditions in a system to meet these characteristics of adults would be these:

1) First of all, you have to <u>plan for active participation.</u> That gets at the points you were making earlier when you talked about interaction with the teachers. You can't have active participation in the most ideal sense unless there is an interactive mode going on. Now, it doesn't have to necessarily be with a teacher in real time; it can be in non-real time - that is, you can

build this into a system and then supplement with interaction in real time on occasions. But there does have to be some degree of interaction and some degree of individualization of instruction, and you build that into a design to allow the learner to select the options that fit his situation, but he has to put a great deal of himself in it and he has to take the consequences of what he is doing because that makes it real and it's no longer just a game.

2) The learning should be problem-centered. In other words, not knowledge as an end in itself but knowledge as a means to other things that are more important. What you are saying about engineers tends to show that this is a general set that most engineers have.

3) The learning has to be meaningful - that means it has to be relevant to life and employment. Consequently, you treat content or subject matter very differently if you want to have this relevancy. I would suspect that the fact that Hartford Graduate Center attracts these 700 learners in preference to other institutions that they could go to is probably a function of the degree of which your instruction and the learning it invokes is meaningful and highly relevant to the phases of professionalism that these people are going through, because that's what the adult will look for.

4) Finally, the other thing I think you have to put into your system, and this is a surprise to many people, is that adults become more and more seeking of autonomous learning as they grow older. They want to yield up less and less to authorities, and teachers are authorities. As one grows older one has a different perception of authority. When one is young he has all the time in the world. One can accept authority for a period of time. You can yield up, but with all the other changes I have mentioned with regard to adulthood, authority takes on quite a different perception and the adult yearns more and more to take more and more control over his life and where he's going. He has a much more mature self-perception, that is, a perception of his abilities and his disabilities and a desire for self-direction and assumption of responsibility; so I would suggest that you build into courses for professionals a sizeable amount of autonomous exercise of choice, acceptance of responsibility and consequence for what happens.

These four things that I've mentioned with regard to conditions or specifications that we try to build into learning patterns are themselves powerful motivations for the adults continuing to learn. If you have them, then the adult tends to begin to motivate himself, and each stage of learning tends to be motivated so that it isn't necessary for "mickey-mouse" or "phoney" kinds of motivation to take place. I think all of these ideas can be designed into any delivery system that you choose.

E. Managers of Learning Resources

1. Summary

The faculty members in a Center for Continuing Professional Education have a vastly different role than those in the conventional university. Although they should be people of recognized knowledge and achievement in a special field of learning, they are not looked to because of their scholarship but rather because of their desires to help professionals and adult learners to gain the knowledge which they need to carry out more effectively their professional practice. Although special seminars and non-degree courses are an important part of the faculty's service to industry, these courses tend to rank below degree courses in the eyes of faculty members.

Faculty members are often reluctant to present courses in which practicing professionals have more expertise in certain specialties than they. Such reluctance could be overcome if faculty members looked upon themselves as managers or orchestrators of knowledge rather than as the

sole purveyors of knowledge. In this role the teacher is often functioning like a consultant, helping industry to utilize the expertise which its various members possess and providing for an internal cross-fertilization of the knowledge of industry's experts.

Although adjunct professors provide a realistic and specialized teaching resource that is valuable to adult learners, Centers of Continuing Education have not yet learned how to utilize such a resource to its fullest. Teaching adjunct professors how to conduct conventional classes may not be useful to a university. Much more useful, as an example, would be seminars that analyze fruitful and unfruitful teaching experiences.

The participants suspected that adult learners made progress in their learning because adult professionals are more persistent in their desires for learning rather than because of the effective teaching abilities of their professors.

2. Discussion Excerpts

--I suspect, from what we've heard so far, that the faculty of the Center still look upon non-degree courses and programs as not so important as the degree courses and programs. No one has said this outright, but I get that feeling.

--You're probably right. Notice how the faculty members at this Workshop rush to the defense of the established courses. When we make a suggestion for a new approach from an entirely different point of view, they say, "But

we're doing that in such and such a course already." For instance, they have told us that their meetings with the affiliates haven't produced many concrete suggestions. They thought the suggestions of the affiliates were frequently irrelevant because they did not relate to courses that were now being taught. They seem to have overlooked the most important objective of those meetings.

--The faculty aren't flexible enough in their thinking.

--You speak of the small size of the Center's faculty and of the subjects that industry wants its people to study. They simply haven't enough people to go around to do that.

--You people here should become managers of the educational process. You don't need to become expert in everything. What you need to be able to do is to know where you can find the specialist and how to organize him as a resource into a study or learning program.

--You have indicated, for instance, that the Center's faculty should give a program in Manufacturing Engineering, but we have been reluctant to do that because industry knows a whole lot more about manufacturing engineering than we do. Yet we're getting a desire from industry for us to do something about a field that they know more about. That's a little bit hard to respond to because we feel the expert is coming to us; whereas we feel we should be going to the expert.

--Let's grant that the experts are in industry. You can still play an important and even major role. You fellows are skilled in putting programs together, in organizing knowledge sequentially to make it easy to learn. You faculty people can get the experts together, organize the course - put the pieces together -- in short, manage the learning process. Incidentally, one of the reasons we look to you fellows at the Center is that you're brutally honest about what you know and don't know, and we respect you for not trying to take the place of experts.

--If it's not degree work, and you fellows know more about it already, why aren't you doing something about it? Why come to us?

--It's really very simple. I was liaison with another company for a while. Because I talked with all of the company's people connected with a certain program, I got to know the

company's capabilities for carrying out the program better than the company did. For example, I found three people working in the same program and I actually introduced them to each other. I told them that you three fellows have the knowledge to solve these problems if you would work together. And then I walked away and laughed. You faculty members at the Center can do the same thing for us. I've got expert welding people and I've got engineers who don't really know what the welding people can and cannot do. You can set up the classroom environment because you're the educational experts, and you can get our people to teach each other under your guidance. This is how I see you as managers of learning resources.

--That's what consultants do. They tell people what they already know, but they make them realize that they know it.

--There's the old gag that the consultant is a fellow who borrows your watch to tell you what time it is. He helps you to use your own resources to solve your own problems.

--Sometimes they call the consultant a catalyst. They make the whole system work the way it should. You fellows in education need to help us make our knowledge system work the way it should.

--Let me warn you about one thing. A single faculty member can't do the kind of thing we have been talking about on a continuing basis. There must be several people from the Center and from industry involved to get the kind of mix you're talking about; or better still, there must be an office here that knows about the interests and capabilities of the faculty members so that the persons who are likely to be most helpful to the company get involved. Otherwise, you're leaving too much to chance.

--There's also another problem here. What about the professional status of the faculty member if he becomes too involved with the routines of industry? When does he have the time to keep up with his own field of knowledge? How does he maintain his professional status?

--For one thing, he should only be involved with problems that relate to his professional expertise. He obviously can't do much research in his field, but he should know the fellows who are doing the research and where the important work is being done. He can also be of value to these researchers by bringing to them the interests and problems that he has encountered in

his industrial contacts.

--You're talking about a vastly different role for the faculty member than is conventionally thought of.

--This is the role of a manager of the learning process who is being responsive to his students and clients rather than being responsive to the interests of his own department or school.

--Although the Center is a unique institution, it still has some of the characteristics of the conventional university, and I think I see a pecking order that places the degree course and the fellow who teaches it above the special course and the kind of manager-of-education role that we've been talking about.

--Let's assume that we could change our faculty mix. We might do it by adding permanent faculty. The present faculty have their hands full with the present degree courses. Would it be possible to get the kind of people I think you are recommending?

--I think it would be. Yesterday we were talking about the characteristics of adult learners. What we were also saying was that the conventional methods of teaching do not serve adult learning needs very well. They're here not because our teaching is working terribly well, but because they have a high degree of persistence in finding out what they want to know. Maybe this means that we shouldn't build a whole new structure, but that the present courses and the present faculty begin to take much more into consideration the desires of adult learners to do a great deal of the learning on their own with but a minimum of guidance.

--What you're saying is that the Center needs to teach its teachers.

--I think it is much more important for this Center to develop teaching skill than to encourage or demand faculty research in a highly specialized subject. Let what research is done deal with the teaching of adult professionals.

--We haven't talked much about the need for interaction between the professional and the learner, and this is the guts of what the Center is all about.

--You're right. Student response is the name of the game. You've got to be able to observe a behavioral change in the student if true learning has occurred - this change may be in his ability to solve problems, in his outlook on his job, in his personal goals, in his interpersonal relationships, in one of many more ways. And this observation can only be made by interaction between the teacher and the student and later on between the former student and his supervisor. You can't do this by true and false tests.

--I'm interested in those adjunct professors. How does the Center propose to make use of their experiences and expertise? It won't just happen by their coming in and teaching a course once or twice a year and then going away. They need to be exploited and made a part of the faculty team.

--We have that same problem where we are. We always have the feeling that we should be getting more benefit from our association with our adjuncts. They lend prestige to our list of faculty. They're looked up to by the students. But too often they're merely showpieces or specialists doing a fine but limited job. We'd like to hear of anything the Center does in the future to mine gold from its adjuncts.

--And the gold is there, I assure you.

F. Media and Delivery Systems

1. Summary

One of the objectives of continuing education is to help a person change his concept of himself, especially if he looks upon himself as less competent and less current than his associates. The middle-aged professional is reluctant to attend formal continuing education classes and compete with bright young professionals only a few years out of the university. Thus, he looks to self-paced education aided when necessary by a mentor or counsellor. For such self-paced education, the use of educational units or modules is

effective. These modules make use of a great variety of media such as audio tape, electro-writers, programmed computer instruction, television programs, video cassettes, slides, moving picutes, etc.

The cost and use of the different types of media differ considerably. The slick, professional television or moving picture educational program is very expensive, yet it may not be so suitable for the really bright students, who get bored with the slow pace of such programs. They prefer less production and more closely structured information.

The length of a learning unit may vary, but once short ten-minute modules are produced, they may be combined in a variety of ways to aid in the exposition of many different subjects. In the following discussion we learn that one can explain binary numbers in ten minutes, can learn to fly an airplane in ten hours, or become a brain surgeon in ten thousand hours. By thinking of the educational unit as aiming at complete mastery before the learner proceeds to another unit, the goals of the unit or module become more clearly defined as does the testing to determine whether one has achieved mastery.

But no matter how excellent the module and how appropriate the medium is for the learner, all learning by media require personal backup by a teacher or counsellor who serves as

the learning manager.

The Center should make use of the sponsoring company's media facilities, and develop modules that will be compatible with the clients' equipment. Such piggybacking not only saves money but also presents educational units in a manner with which the learner is familiar.

2. Discussion Excerpts

--The problem facing continuing education is far deeper than merely directing the right information to the right person at the right time through whatever means you select, although many times media is useful for that purpose. The problem is really more motivational, more personal, more free, more attitudinal. It's not just - I have a gap, a need to know something, help me fill it in. The problem really is that some people perceive themselves as less competent than their associates. If you can't change that self-perception, you've got an inefficient, unhappy professional.

--Are you implying that such people want to bring themselves up to speed as unobtrusively and as rapidly as possible?

--That's a good way of stating it. And that is precisely why I see the use of delivery systems and the use of media as being valuable. These people want to catch up on their own with a minimum of help, but with help when it is needed.

--Don't try to use delivery systems or media without an instructor, or counsellor accessible to back them up.

--The Center needs to build into its programs such factors as self-pacing because the adult student wants much more autonomy, particularly in the use of his time. Well-designed learning packages will help greatly to meet this desire of the adult learner.

--You don't have to design the whole package all at once. In fact, you probably shouldn't do so. Let's think of the problem in terms of small learning units or modules.

--When we use the word module or media here, some people think of television, and others think of a slide. A slide can be a module. You've got a tremendous range of media and delivery systems that you're dealing with.

--Given a collection of intellectual modules of this sort, you can now look at the market. Some markets can afford color television --think of professional development for M. D.'s. In one place in Pennsylvania they would bring doctors in for an afternoon of lectures and illustrations. That was costing them real money -- as much as one thousand dollars per doctor for him to come in and spend the afternoon. The doctors would be perfectly delighted to pay $50 for one hour of color TV that they could look at in their offices.

--A module can be anything from ten seconds to ten minutes to a hundred minutes, etc. In ten seconds you can present a single sort of message, such as a TV commercial, "Wheaties taste good like a cereal should." In ten minutes you can present a single concept. Given the ordinary college student, I could probably explain binary numbers in ten minutes. If I wanted them to really understand binary arithmetic, I'd better go to a two-hour session. Ten hours is a task, a skill, a typical short course - ten hours of instructional time. You can learn to run a potter's wheel in ten hours. If you're lucky, you can learn to fly an airplane in ten hours. A hundred hours is sort of the conventional course. In a hundred hours you can get an airplane pilot's license. You can learn to ski pretty well. A thousand hours is where you start to get professional, and, if you intend to be really skilled, you'd have to plan to spend ten thousand hours to be an airline commercial pilot or a brain surgeon or a good professional historian.

--Cartesian coordinates - ten minutes.

--I don't think you can just hand people a smorgasbord of modules and expect them to be very successful. This is where skilled course management comes in.

--The instructor needs to select those modules which are

available or create modules that will carry out precisely the purpose of the course. Then, he puts these into a delivery system - a flip chart with audio tape might be one system such as that used successfully by ACS. An electrowriter with an audio channel might be another system. A TV cassette might be a third. You could use a computer program for another type of delivery. This concept of module delivery has limitless possibilities depending only upon the imagination of the people putting the program together and their correct gauging of the intelligence and experience and interests of their learners.

--Media using a module of an hour or longer is only economically feasible if you are teaching a fairly stable subject - one that's not likely to change much for three or four years and you have a large enough market. But a ten-minute module can be used in combination with a great variety of other modules or devices. For example, the student is faced with needing to know a certain amount of mathematics to solve a set of problems in a course. Instead of making him take a whole math course out of which he will only use two or three concepts, why not put these concepts into modules and give him these at the times he is faced with needing them to solve the problems. This provides motivation, real situations, and a deeper appreciation of the need to become proficient with this mathematical tool.

--Summing up what we've said so far -- the module makes use of all appropriate media, it may be indefinite in length -- but very long modules may be too costly, and sections of them may become obsolete too rapidly.

--There's another point to make about the module. It must be under the absolute control of the professor and it must have a stated behavioral objective that can be observed and measured. The aim of the module is complete mastery, and only when that is achieved and certified by test should the student move on the next module in a sequence.

--Groups of modules would constitute a course and groups of courses would lead to a degree.

--The beauty of this concept is that it is time independent and it meets the requirement of the adult learner for time-

place convenience.

--I want to go back to the construction of the module. I think we can learn something from the SUN (State University of Nebraska) technique. There the TV programs which are telecast and which are also packaged in video cassette are constructed most carefully. Each course has a content specialist, a media specialist, an educational psychologist to space the learning properly and to sequence it, and a testing or evaluation specialist, who, before the course is developed, defines what is to be learned in very specific terms and builds the tests which will be used to evaluate that learning. The content specialists, or professor, is advised by a team of consultants who are usually acknowledged leaders in their professional education group or society.

--That's a very expensive program -- much too expensive for a single institution like the Center here.

--You have to remember that the learners comprise students in the whole state of Nebraska, and sometimes in the three adjoining states which make up the Great Plains University. I mention this not as a model for the Center but as an illustration of all of the elements that should be considered in the construction of a module. I assume the Center is planning to have some sort of module production technical department, using people to be added to the staff as technical experts.

--We have discovered that the really bright student such as those attending the Center's programs don't need and, in fact, don't like slick professionally produced programs. Students lower down in the educational process and less bright college students, however, respond better to programs produced with high technical quality.

--Here again we have the bell-shaped curve. The bright, independent iconoclasts are impatient with the slow pace of slick film production and with the slow pace of most media.

--This brings us to another principle. You have to consider a number of different types of media because people respond differently and you must find the type of medium that best suits your particular learners. A rough blackboard sketch may be all you need to get a certain idea

across.

--And don't forget the book. It can become one of the best sequence of modules you have. And it's the only convenient random-access medium, especially if it has a good index.

--I suspect that much of the desire for electronic information storage and retrieval has come about because technical people in general have never really learned how to use a library.

--In some cases they have never learned how to read selectively by using a book for the random access you mentioned.

--As a fellow from industry, I'd like to suggest that you check on the facilities which many companies now have for the use of media. Many of them have fairly advanced facilities. You should build your modules so that they will be compatible with a company's system. And also study concentrations of students. You may want to send an instructor to a site where there are enough students. The instructor then becomes the delivery system.

--This reminds me that we had difficulty getting our forty-five-year-olds interested in continuing education. They were diffident about going to a classroom and competing with bright young learners. And I don't blame them. We finally solved this difficulty by establishing terminals for module delivery at convenient locations so that senior people could learn on their own and not have to compete.

--We're trying to build a reference library that will tell us where good modules and learning programs exist. Do you know of any good listing of such programs or teaching modules that we should refer to?

--I'm afraid you're mostly going to have to build up your own reference system to locate the degree of sophistication you're looking for. Most of the stuff on the shelf is pretty elementary.

--The University of Wisconsin, Stanford University, UCLA, Syracuse University are places where you might find something. The SUN program and Great Plains University might have programs out of which you might want to take sections or modules if they'd let you.

--But in general I'd say don't look to the outside for any great help in this area.

--I'd like to repeat myself. Don't be above using a flip chart and audio tape recorder. You can make the flip chart into a flip book, and you can mail out both the book and the audio tape. It's cheap and it's flexible and it's limited only by the imaginations and creativity of the producers.

--Then if you provide for a chance for the student to query a an instructor when he gets stuck, you'll have a very effective delivery system at low cost.

--We use a WATS line, and the student telephones in his questions at any time of day or night. In addition to his question, he leaves his number and the times he can be called back. Then, he ha the instructor can talk at their convenience. If he still needs help, the instructor makes an appointment for them to meet either on campus or somewhere near where the learner is. Often by precisely phrasing the question, the learner finds the answer.

--We haven't mentioned how media can be used by an instructor before a class to make his explanations more readily understandable, but that's a whole other subject on teaching technique.

--I'd like to mention that media can be very effectively used in testing. Most examinations have already done the hard work for the student in the selection of information, and all he has to do is turn a crank - put the problem into a formula and solve. The real test is finding the significant factors in a problem. A case study presented on film can test this by providing much non-pertinent information as well as the pertinent. This is the way the student meets and solves problems professionally. So think about using media as testing devices as well as learning devices.

G. Top Management and Continuing Education

1. Summary

Unless top management believes in the value of continuing education, the company will not give its professionals the

kind of encouragement and support they need to keep abreast of their professional fields. The question dealt with in the following excerpts is that of how to convince top management. There are some diametrically opposed suggestions and recommendations.

There is agreement, however, that exercises such as the Workshop are valuable in serving as starting points for cooperation by the Center and middle management in planning to involve top management in continuing education.

The Center is advised that sometimes a third party can do more to convince top management than a well rehearsed multi-media presentation for a company's decision-makers. The cost of a continuing education program does not appear to be the deciding factor. When a company is convinced that it needs such a program, it is usually willing to pay what it takes to get one of high quality.

2. Discussion Excerpts

--One other thought - we've talked a little bit about the packaging of education. Part of the package must respond to the need to get the manager involved in the education of his people. Otherwise, he won't appreciate what they're doing. And that's a constraint on the package. Don't just worry about the logistics of the package. Worry about the fact that you've got to get the obsolete boss into the act.

--We're all assuming that making it possible for engineers to move laterally is a good thing. If I were an upper manager, I'd want some indication that this really was a

good thing.

--I don't think this should give us any trouble. The upper managers all admit that lateral movement is absolutely necessary.

--The first thing we have to do is convince upper management that some kind of continuing education is profitable - whether it is for lateral movement or greater depth of knowledge in a specialty.

--Why can't you have an Aspen Institute type of thing here where you would sensitize top management. Then, you'll have a filtering process where the ideas will get down to the people who actually put them into practice. What you need to do is to develop a way-out program for top managers. You have to reach them to make continuing education really click.

--It may actually be way-out, but it shouldn't look way out.

--I don't know that we have to sensitize them. All we have to do is to show them that we are capable of doing something that will benefit them from the profit point of view. Maybe we should try to accumulate data that we can take to top management as evidence of the effectiveness of continuing education. All we have now is a general agreement that continuing education is a good idea. We have no hard facts.

--We do have the evidence that people who have been exposed to continuing education seem to rise more rapidly in a company.

--Maybe those were the type of people who would have risen anyway without the continuing education.

--You're making a rational approach to this. I'm not sure that the rational approach is the one to take. Aren't we really talking about attitudes and awareness? Maybe the people that a company should have in managerial positions are the people who are comfortable making decisions, who don't procrastinate in decision-making, who don't pass the buck. This calls for very different qualities than those usually possessed by a professional expert who wants to be absolutely sure of his facts.

--What we need to point out to managers is that opportunities for growth in any direction and opportunities for more satisfying jobs make an ultimate contribution to company

profits. These things are not something you can accumulate direct cause and effect data on.

--Let me suggest something. If you're going to reach top management, they're not going to have much time to listen to you. What you're going to have to do is put together, a quick dog-and-pony-show that won't take more than an hour of their time. Use your multi-media. Rehearse it well. And then make your pitch. That's something The Hartford Graduate Center could do. Work up a show like this. Go over it with you fellows in industry who appreciate the value of continuing education. Get your reactions and make whatever change you suggest. Then make a date to show it to top management. The Center has to help you people from industry who are at this Workshop to carry the story to top management.

--I don't think you need to put on such a show. What you really want to do is to stimulate management. Bring in a big name in management who will talk to them and get them excited about the values of continuing education. Don't try to do it yourselves because they expect you to make a good case for yourselves and that doesn't overly impress them.

--While we're talking about this, let me throw in another idea. Enlist the wives. The wives know more about this business of satisfaction, conflicts between work and life, and so forth.

--Let me tell you about a company experience that might be an analog of this. MBO (Management by Objective) has been around for about fifteen years. Five or six years ago our company decided to put it into effect, and it turned out to be a complete flop. Then two or three years ago the company got interested in it again and brought in the top expert in the country. He took all of top management - all of them without exception away to a retreat for a week of conferences. And now we have an MBO program in-house - and it seems to be working. It has now achieved a credibility and acceptance at both the top management level and the working level.

--Our MBO program came from the top down, too, but there's no active punch to it. It's nice to talk about and it's what we should be doing in theory, and what we say we're doing. But often we're not doing it at all.

--There has to be a rapport, a dialogue, an interaction built up between the faculty of the Center, the students, and the company management. And it isn't easy to motivate middle management.

--I work in a company where $100,000 was spent for an educational program because one of the top managers firmly believed in it. This tells me not to waste too much time trying to motivate the fellows who are immediately above me, but to try and get permission from them to attempt to motivate their bosses.

--How does industry get the answer as to what it needs to know? The managers have to be able to talk to the people who are on the frontiers of knowledge or who are in the business of translating that knowledge for the fellow on the job. This is where the Hartford Graduate Center comes in. Somehow we've got to get the Center and top management more actively involved in planning for the education and training of people who are going to head up the work on a new product or line of products for which the managers foresee a future need or market. A side effect of this is that when the managers have been involved in planning such a training program, they will accept what the young professionals bring to them as a result of their studies.

--Isn't that the purpose of this whole workshop - to find and recommend ways for more effectively bringing together what a professional needs to learn and what the Center can help him learn.

--And if the Center hasn't the resources to help, it can go out and contract for that help.

--This workshop has been valuable because it has been providing the kind of interaction that we've been talking about. We've gotten to know each other better.

H. Measuring and Evaluating Learning

1. Summary

Professionals and their sponsors are seeking ways of evaluating learning programs that are designed to aid them in

their work. In the following discussion, three types of tests are considered - diagnostic tests that make professionals aware of a knowledge deficiency which they might have, mastery tests that indicate that a person has mastered the material in a specific module, and performance tests that indicate how well a person is carrying out his specialty.

The more repetitive the task, the easier it is to evaluate performance and to establish performance norms, but most managerial and professional tasks are not repetitive. Only subjective evaluation can be used for them, but over a sufficient period of time subjective evaluations are reliable and effective. Such evaluations are especially applicable to the programs offered in continuing education by places such as the Hartford Graduate Center.

The Center is urged to develop tests making use of whatever media are necessary to show how a professional copes with real-life problems - how he analyzes the problems and what he does about the analysis. There is presently too long a time gap between the taking of a course or program and evaluating whether such study was really beneficial in helping the learner to meet his performance objectives. As one wise manager stated, "These fellows who take your courses are really keen on getting ahead professionally.

You don't have to motivate them. That's why universities can get away with poor learning programs and ineffective teaching. With just a little help, the good people learn by themselves and make even the poor professors look good."

2. Discussion Excerpts

--We've been talking about non-conventional ways of learning. How do we measure that learning? Do we wait until a fellow falls flat on his face to discover that he hasn't really learned what we thought he had?

--The instructional design team as it builds the components - the modules - also builds the testing, and this testing is based upon an agreement as to just what the module aims to do. We also build alternative modules using different kinds of media and different psychological approaches to try and achieve the same result.

--Then conceivably a person who doesn't understand or gain mastery from module three could study module three "x" and learn from it what he needs to.

--Does he test himself?

--There are both kinds of tests. Usually the self-testing comes first, and when the student is satisfied that he knows what the module presented, he then asks for a test for that module from the instructor or from a testing agency. Sometimes he goes to the instructor and says, "I can't answer this. I need help on this part of the module."

--A professor at RPI is giving a course based on this type of instruction to seventy students in advanced electrical circuit design, and he reports that it takes up no more time than he should have been spending on the course. "Should have" are the controlling words. His point is that such a course doesn't take any more of a professor's time than is theorectically factored into the teaching load. Furthermore, there are very few grades under A or B in this difficult course. Students do achieve mastery.

--I would like to put this concept into a recommendation for HGC. Provided we can come up with validated tests,

I'm sure this is the way to go. It gives the student confidence that he really knows something. It gives the sponsoring company proof that it's spending its money wisely, and it gives the Center assurance that it's producing quality learning programs.

--I'd like to have the tests checked over by competent outside authorities - at least at the beginning of such a program. Then, we get quality assurance.

--At the University of Wisconsin we have four hundred modules. Some are two-day programs, some are week-long programs, some are full semester courses. If an individual wants to become a generalist, he can, with counselling, select those modules that help him become one. Then, if for instance an engineer or manager has difficulty, say, with material selection, he can study a two-day module on this and then test himself so that he can satisfy himself that he now has achieved mastery of this. If he doesn't satisfy himself that he knows what he thinks he should, he goes to a counsellor who suggests another type of approach - say a three-day course, a semester course, or study from a video cassette. The point is that he is attempting to meet an objective that he and we have established for the type of career that he is aiming at. By building validated tests that indicate when a learning objective is reached, we are free to use all of the various kinds of media and learning approaches there are from on-the-job learning to formal lecture courses.

--I'd like to hear from the company representatives as to what they would take as evidences of the success of a learning program.

--First we look for demonstrated competency.

--The improved skill situation - the ability to solve problems and do certain kinds of design.

--How can that be verified?

--We have certain job objectives for our people - how well they do certain jobs and how fast they get them done. For instance, if you're working with computer technologists you want to know if they can get the programs into the computer and out of the computer accurately and within a specified time. When you get into the managerial or advisory tasks, it becomes more difficult to evaluate

performance. Over a longer period of time, you have to ask, "Are they or are they not meeting their objectives? How well are they meeting those objectives, and are they meeting them within reasonable limits of time?" There are some very subjective measures here.

--I don't think you need to apologize for the fact that they are subjective.

--They're the best measures we can afford.

--What you're saying is that over a period of time you can and do evaluate whether the training and education a person has received in this or any other Center has been significant in the way he handles his job.

--Let's talk about a particular drafting group that over a period of time has established certain standards of performance. These standards may turn out to be so many square feet of drawing per man per day. It's reliable because it covers a large population. If you can show that with a new drafting table that the st ndard of performance will go up and that your cost estimates are going to be say 20% lower, this is a very real thing for the manager.

--Do you think this Center should come in with that kind of data about their courses or programs?

--The Center can't accumulate such data. Learning that helps problem solving is very much more abstract than performing drafting tasks. I mentioned this only as an analogy. As you begin to get away from repetitive jobs you find it very difficult to try to derive such standards. But the ability to do future work at a lower price is a very real accomplishment, and this has to be subjectively evaluated by managers who are going to spend a lot of money educating their people.

--Now, if top management evaluates the managers on how well they develop their people, especially their professional people, you'll find the operating managers paying much more attention to opportunities for continuing education.

--With a mature individual, you can simply ask him or her whether they believe they gained anything from a continuing education course. And then six months later you can ask them again to evaluate the course in the light of their on-

the-job performance. Then, a year later you can check to see whether that individual has actually done his job better, grown in his abilities to handle more complex situations.

--I'd like to report a kind of self-evaluation and testing for physicians that has been developed by the University of Wisconsin. The University has identified areas that had made progress in the various medical specialties in skills and knowledge during the past several years - say ten years. They then supply a diagnostic test in a physician's specialty. He pays for this to find out how he stands in relation to medical progress, or what the University considers new knowledge. It's a written test which he takes by himself. He sends that back and on the basis of analyzing that test, the University makes recommendations as to the articles he should read, the conferences he should go to, the special courses that they're aware of that he should take. It's a very expensive service. It's essentially an advising and referral service.

--The American College of Physicians and Surgeons does the same thing on a national scale, I believe. It is a test of currency of knowlege. You then get a score back that tells you that of all the people involved in your specialty your knowledge of the advances in the specified time period seems to be at, say, the 30% level. Only you know this though, because your test has had on it only a code number, and elaborate precautions are taken to preserve your anonymity. You as a doctor make the choice as to whether you're going to do anything about the test results or not.

--If there was some particular technique that you wouldn't have heard about, there would be a group of answers that you would have missed. As a result, you would be told where you could gain this knowledge.

--This is extremely valuable because many people - in fact most people at the professional level - aren't aware of what they should know and don't. And once they're aware of that, they need to know how to do something to correct that knowledge deficiency.

--I think you're right at the center of something extremely important to the future of continuing education...how to

make professionals aware of a knowledge deficiency that they should do something about.

--For professionals I don't think the conventional two-hour or three-hour written test is particularly valuable. What is valuable is the way he copes with certain typical real-life problems -- how he diagnoses and what he does about the diagnosis. There's a great field for you fellows at the Center to build methods for this kind of evaluation. Perhaps as you get more expert in the uses of media, you can come up with some innovative ways of doing such testing.

III. OBSERVATIONS AND SUGGESTIONS FOR ACTION

A. The Center

1. The Center already has a unique flexibility in responding to some of the needs of industry. As it implements these recommendations, it should not discard its present strengths. Rather, it should evolve from strength.
2. Whatever is done, maintain high quality of both offerings and their delivery as perceived by the learners.
3. Establish a technique for measuring the effectiveness of all programs both old and new by establishing specific goals to be achieved and then carefully finding out if they were achieved.
4. Define role as an education broker particularly for identifying, packaging, and delivering information and expertise from educational organizations, industrial organizations, and governmental organizations. At first the beneficiaries would be the local industries with expansion if warranted geographically and to other groups.
5. Plan for more formalized and extensive interaction with local industry in the design of packages and programs.
6. Examine the value attached by Hartford industry and professionals to formal degree programs versus modules grouped into short courses to develop competency.

7. Make sure that educational programs are placed upon a pay-as-you-go basis. Hence, be cautious about federal or foundation funded programs that may become liabilities after the grants from the sponsors cease.

B. The Center's Program

1. Consider the development of bi-level courses for both operating professionals and middle to upper level managers.
2. Carefully investigate the desire by industry for a Professional Development Degree aimed at giving a breadth of viewpoint to specialists and enabling them to become successful managers of professional talent.
3. Expand and make more specific the description of course offerings to aid learners in their selection of courses and programs to meet their individual objectives.
4. Develop modules or learning units of relatively short duration - hour, day, week, month. These may be combined by the learner with suggestions from an advisor into a program to develop certain identified and needed competencies or even into a degree program, or they may stand by themselves as adequately meeting a need.
5. Investigate a variety of methods of teaching-learning involving in addition to the lecture-book method, independent study with reference to a counselor or tutor, packaged learning using a variety of media, on-site learning with

visitations by a professor, distance learning using CCTV, video-tape, electrowriter, audio-tape or discs, flip charts and text, etc.

6. At first use the innovations provided by media carefully and sparingly because of the possibility of high initial cost, obsolescence and inadequate volume of market. Remember that the brighter the audience the less the need for "slick" media.

7. Provide for a regular program of learner and sponsor feedback from all of the various educational programs, and also provide for a rapid adjustment to that feedback when it is required.

8. Plan for some kind of a resource such as an instructional design team, which may consist of from two to ten people.

C. The Faculty

1. Develop a faculty more able to respond to a greater and broader range of professional manpower requirements, probably through greater dependence upon adjunct faculty.

2. Use faculty meetings as an opportunity to relate more closely and quickly to changing client or learner requirements, and as a way of exchanging teaching experiences, both the successful ones and the non-successful ones.

3. Plan regular instruction for new adjunct professors on the effective teaching of professional adults. Hold at least

one session each year for all faculty members on the "art and improvement of teaching."

4. Help faculty members to conceive of their roles in working with adult professional learners as orchestrators of learning programs rather than as sources of final and complete knowledge.

5. Realize that the present HGC faculty, although doing a highly professional and commendable job of presenting degree-oriented courses, tend to regard non-degree, special courses and programs as being of lesser importance than the degree ones. The workshop recommended that an attempt be made to reverse this attitude.

6. Make sure that there is a program for the faculty members to relate to basic research in their specialties to help them keep current and to anticipate future educational requirements.

D. The Learner

1. Become keenly aware of the characteristics of the professional learner and his environment.

2. Relate continuing graduate professional education to the desires and career objectives of the learners. Assist the learner in more precisely identifying his career objectives.

3. Develop tests for the learner to discover his own strengths and weaknesses in keeping abreast of the state of his

specialty.

4. Help the learner to change his self-concept.
5. Decide toward which of the learners HGC should concentrate its attention - 3% innovators, 8% pace-setters, 80% majority workers, 10% laggards.
6. Carefully investigate the learner's immediate surroundings and his access to learning.

E. Cooperation with Industry

1. Arrange for faculty members to work with specific Hartford industries - one or more faculty members per industry - to provide for continuing exploration in forecasting industrial educational needs on both a "hot line" and long range basis.
2. Make certain that the top management of sponsoring companies are aware of HGC's goals and the long-term financial benefits that will accrue to the companies from a realization of those goals.
3. Three or more times a year arrange for industrial representatives to brief the faculty on developments and problems in their companies. (Note: This has great psychological value since the client is teaching the teacher.)

APPENDIX A

RENSSELAER HARTFORD GRADUATE CENTER
CONTINUING EDUCATION WORKSHOP

February 26-28, 1975

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APPENDIX B

Mission and Goals of The Hartford Graduate Center

MISSION

The mission of The Hartford Graduate Center is to meet the knowledge and learning requirements of the working professional. Through this mission which differs from that of the conventional graduate school, the Center seeks to benefit both the individual professional and the corporate, public, or educational organization for which he works. To this end The Hartford Graduate Center serves organizations and professionals by enabling them to become more effective intermediaries between the frontiers of research and the application of knowledge gained from that research.

GOALS

The Center attempts to achieve its mission by accomplishing the following goals:

1. To help professionals advance their knowledge in their professional fields through the offerings of conventional and non-conventional knowledge delivery systems at the graduate level, and by helping organizations and professionals become aware of newly developing knowledge in fields related to their special interests and capabilities.

2. To help organizations achieve their particular aims by helping to assess their future needs for professional skills compared with their present inventory of those skills; and by helping them to meet their future needs by the design and presentation of specialized programs and learning packages.

3. To monitor new developments in learning theory and the application of new learning and communication techniques, and to apply them to The Hartford Graduate Center's own programs and to those educational programs of its constituency. Furthermore, to assure that such applications be humane and individualized.

4. To serve as a community resource of specialized information and as a community nucleus of knowledgeable people who can assist in meeting the informational needs of all elements of the community, especially those of industry, government, and other educational institutions.

IMPLEMENTATION

The Center is implementing its goals through four types of operations:

1. The teaching of formal courses and programs for degree credit.

2. The development and presentation of special non-degree educational programs to meet individual, corporate, and community needs.

3. The development and acquisition of learning programs and devices, the use of new educational methods, and the active investigation to find new and more effective techniques to keep organizations and professionals abreast of new knowledge in their fields and in related fields.

4. The acquisition of storage, retrieval, and dissemination facilities for information relevant to the mission of the Center and the needs of the community.

Amplification of Goals

1a. "To help professionals advance their knowledge"

This activity will be limited to the graduate level and will include conventional and unconventional delivery systems and instructional packages and aids. Development of professional journals, however, is not intended.

Courses will be conducted:

- at The Hartford Graduate Center
- at industrial and governmental facilities
- at the individual student's residence through self-paced instruction programs

Knowledge advancement requires:

- good library and documentation services
- an inventory of human skills in applicable fields
- a good resident faculty as core
- a good non-resident (adjunct) faculty of experts to draw upon
- an adequate facility
- adequate equipment and operational capability

1b. "To help organizations and professionals become aware of new knowledge"

This activity will include courses, workshops and special seminars. The intent is for The Hartford Graduate Center to act as a broker between specialists on the "knowledge frontiers" and the professional in local business and industry. The Center acts as a catalyst where appropriate.

2a. "To help organizations inventory present skills and assess future skill needs"

This requires knowledge of the state of art of skills assessment, and helping corporations define and design skills required by jobs.

Also required is knowledge of how to relate professional skills to functional objectives.

The Center will need to anticipate skills required for emerging technical developments.

2b. "To help organizations meet future skill needs by the design and presentation of programs and learning packages"

The intent is to design and then implement from the existing stockpile of resources where possible or to create and produce the resource materials as needed. One mode is to create a "skills lab" for design, stockpile and retrieval of materials, and for program development to meet assessment needs.

3. "To monitor new develcpments in learning theory and the application of new learning and communication techniques"

The intent is to apply these new developments and applications to The Hartford Graduate Center's own program and to the programs it designs for its constituency. The applications must be humane, and should be individualized where appropriate. The applications can be presented through lectures, seminars, conferences, short courses, TV and other media presentations by the Center's own group or by advisors to the Center.

4a. "To serve as a community resource of specialized information... to meet informational needs of all elements of the community"

Mechanisms might include:

1. A library with publications and media for sale or loan
2. Supply staff of consultants from the Center or from an inventory of adjuncts and associates
3. Community input and feedback links
4. An educational consortium of people and organizations equipped to act as a resource

4b. "To acquaint organizations and professionals with the variety of sources of information"

The Center proposes to make its clients aware where information is and what is available through seminars, short courses, consulting, and the use of "packaged" information. The purpose is to create an external network of linkages with developments, people, projects and publications in fields specifically relating to the organization's and professional's objectives.

APPENDIX C

RENSSELAER HARTFORD GRADUATE CENTER DEVELOPMENT PLANNING WORKSHOP FOR CONTINUING EDUCATION FOR THE PROFESSIONAL

Background and Summary

A workshop using the talents of leaders in the field of continuing graduate education will be held at the Rensselaer Hartford Graduate Center (RHGC) on February 26, 27, and 28, 1975. This workshop is viewed as a major step in the implementation of the RHGC program to make professional continuing education available to practitioners whenever it is needed by them, and at a place and in a manner most convenient for them.

The essential objective of the workshop is to survey and critically examine the advances that have been made in the design and delivery of learning programs to professionals. A concurrent objective is a consideration of the limitations and restraints that a RHGC program will initially encounter, such as the lack of desired resources, especially in regard to the learning packages themselves or in regard to modes of delivery. RHGC would like to know about the material that is already available or in preparation, about methods of presentation that have been found to be effective, and about the guiding principles of learning and the motivation of learners at the professional level.

RHGC was established in 1955 to provide opportunities for working engineers and managers to obtain master's degrees in their special fields. Initially funded and supported by the United Aircraft Company for the continuing education of the company's engineers, the program has grown to a participation by over 200 organizations comprising industry, government, research companies, education, and independent professionals. About 1400 students each year are enrolled in RHGC courses or programs. Based upon nearly twenty years of experience in the education of working engineers and managers, RHGC has recently conducted a self-examination as to its future development, and it has adopted the new statements of its mission, goals, and implementation. These are presented in Appendix B.

During the past ten to fifteen years, many development projects in continuing education and in educational technology have had a combined effect of substantially changing learning methods and resources. Many exploratory developments have been created and many innovative concepts have been applied in a diverse number of ways. These new learning techniques and resources should be critically and comprehensively reviewed and assessed before RHGC begins to create its own learning programs. It is intended that the planned workshop provide a major initial step forward in

this direction.

Workshop Objectives and Approach

The workshop proposes to examine the total learning system. The elements of this system as we define them are defined in Attachment A. In the context of this system, the workshop has the following specific objectives:

1. A survey of resources for continuing graduate education and information for the individual learner.

2. A critical review of how these resources have been most effectively utilized.

3. A critical review of the approach proposed by RHGC and the development of recommendations as to how these learning resources may be used most effectively in the RHGC program.

Prior to the survey of the resources, their utilization and application to the RHGC program, consideration will be given to all elements of the learning system, and especially to the process of learning, learning motivation, career planning, and the learning environment for individuals. Counseling and testing also will be discussed. The establishment of criteria for measuring satisfactory performance in applying the knowledge that has been learned will be most necessary and the experience of others in this regard will be examined and evaluated with care both for immediate results and for long term accomplishments. Methods of self-testing will be examined and suggestions sought as to those methods that

experience has shown to be most effective. In any learning program, provision for counseling and advice is of great importance. Ways of approaching an optimum method of help, advice, and general counseling will be sought.

The findings of the workshop will provide the primary basis for a resource workbook designed to be a guide or a set of specifications for RHGC joint program with business and industry. The first of these objectives - the Survey of Resources - will include:

a. New methods of directed learning. Of particular interest are methods involving student self-sufficiency and flexibility with minimal involvement of faculty or formal classroom teaching.

b. Educational technologies. These include in particular audio-visual devices and computer based instruction, as well as other communication devices or systems developed or applied to systematic learning (e.g., interactive lectures).

c. Content units and components of learning materials. The new learning methods and technologies require totally different modes of assembling content information at times radically differing from textbooks or formal lectures. These may be applied to completely integrated courses or to components of courses. When so applied, these may be considered to be

learning packages and as such would represent the content resource analogous to the textbook in traditional modes. The availability of these learning packages and the prospect of using them in a very flexible manner is a prime consideration in the present approach.

The second major workshop objective is a critical review of the application of these learning resources. These have frequently been developed on a pilot basis and are still being tried out in specially designed or selected situations. There is a need to know much more about the extended applicability of these resources. Among the considerations will be:

a. The identification of the rationale including: objectives, circumstances, and results for various learning resource developments. In exploratory and pilot experiments this information may be of greatest value for both assessing the nature of the accomplishment and its success and considering any broad extension of learning resource use.

b. The extended applicability of resource developments. In most cases there is anticipated a far wider and more diverse application than may be specified in an originally developed project. To what extent for the various learning resources has this occurred? What has been the nature of the extension and the success in use?

c. Cost effectiveness. A major consideration in educational developments is the need for effective learning at low cost, for cost in the long run may be decisive in determining what new resources will be widely used. Consequently, cost must be an essential element in assessment, particularly where a major marketing effort utilizing these new approaches is contemplated.

The two objectives dealing with learning resources and their applicability are preliminary to the third and essential objective of reviewing the RHGC program and determining which resources can be applied most effectively. For this purpose, the following consideration will enter.

a. A detailed examination is proposed of the plans for implementing the RHGC program. An evaluation of needed resources is essentially dependent on a detailed description of the plan and on an understanding of other patterns of continuing education and learning situations for which these resources may have been developed and used.

b. On the basis of the defined RHGC program, what will be the prospects for resource application? What resources can be directly used? What modifications and adaptations of existing resources are feasible?

c. To the extent that existing resource development is

inadequate for the RHGC program, what accommodation can be made? What is necessary in order to define these inadequacies sufficiently so that the creation and development of new resources by RHGC can be accomplished? What will be necessary for the successful implementation of the RHGC program? What adjustments or modifications of the RHGC program may be desirable to make it marketable, commercially sound, and successful in meeting the learning needs of professionals?

Workshop Program

Although RHGC has established objectives for the workshop and has put together a tentative program utilizing the period from 9:00 A.M. February 26 to 3:00 P.M. February 28, 1975, the program will be flexible enough to permit studies in some depth of these elements that participants indicate are the most vital to the success of the RHGC plan. The following is the proposed Workshop Agenda.

WORKSHOP AGENDA

February 26 - Wednesday - Seminar Hall - RHGC

9:00-9:15 A.M.	Introductory Remarks - Robert Ellis.
9:15-10:00 A.M.	History of Development of RHGC and Its Programs - Warren Stoker, President, RHGC.
10:00-10:30 A.M.	Questions and Discussion.
10:30-10:45 A.M.	Coffee Break.
10:45-11:15 A.M.	RHGC Advanced Planning Program - Robert Ellis.
11:15 A.M. to 12:00 Noon	Questions and Discussion.
12:00 Noon	Lunch at Seminar Hall.
1:00-1:30 P.M.	Tour of Rensselaer Hartford Graduate Center.
1:30-2:15 P.M.	Keynote Address - "Human Factors of Continuing Education," Donald Miller, IBM Corporation.
2:15-3:00 P.M.	Questions and Discussion.
3:00-3:15 P.M.	Break.
3:15-4:00 P.M.	Keynote Address - "Continuing Education by Design," John Klus, University of Wisconsin.
4:00-4:45 P.M.	Questions and Discussion.
4:45-6:00 P.M.	Free Time.
6:00 P.M.	Cocktails and Dinner, Sheraton Hotel.

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WORKSHOP AGENDA

February 27 - Thursday - Seminar Hall - RHGC

9:00-9:30 A.M.	Proposed Approach of RHGC to Continuing Education - Robert Ellis.
9:30-9:50 A.M.	Questions and Discussion.
9:50-10:00 A.M.	Charge to Working Session Participants - Robert Ellis.
10:00 A.M. to 12:30 P.M.	Session A - "Technical Resources for Design and Delivery of Learning Programs" - Concurrent Meetings, Rooms SG1, SG2, SG3 in Seminar Hall.
12:30-1:30 P.M.	Lunch at Seminar Hall.
1:30-2:45 P.M.	Plenary Session - "Results of Session A" - Seminar Hall.
2:45-3:00 P.M.	Break.
3:00-5:00 P.M.	Session B - "Human Conditions and Learning Environments" - Concurrent Meetings, Rooms SG1, SG2, SG3 in Seminar Hall.
Evening	No Formal Agenda.

WORKSHOP AGENDA

February 28 - Friday - Seminar Hall - RHGC

8:30-9:45 A.M.	Plenary Session - "Results of Session B" - Seminar Hall.
9:45-10:00 A.M.	Break.
10:00 A.M. to 12:00 Noon	Session C - "Application to the RHGC Program" - Concurrent Meetings, Rooms SG1, SG2, SG3 in Seminar Hall.
12:00 Noon to 12:45 P.M.	Personal Time to Prepare Individual Comments.
12:45-1:45 P.M.	Lunch at Seminar Hall.
1:45-3:00 P.M.	Final Plenary Session - "Results of Session B and Summary Critique, Recommendations and Guidelines" - Seminar Hall.
3:00 P.M.	Workshop Adjourns.

ATTACHMENT A

LEARNING SYSTEM

The major elements that will be considered in our "learning system" approach are:

1. The environment or "climate" and place where a person gains knowledge (e.g., on the job, at home, at a learning center);

2. The "learning package" itself comprised of the content, the technology used (learning aids) and the methods by which information is transferred;

3. The "mode of delivery" or way in which the learning package functions (e.g., formal classroom, self-paced instruction, correspondence, or combinations);

4. The learner and learner response or an individual's learning characteristics and the way that individual processes information to comprehend what is received and how to apply it; and

5. The consultation and tutoring necessary to assist the learner in acquiring and processing information, and to ensure that the learner carries on self-testing so that individual is satisfied that the information is understood.